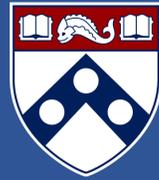


Addressing Social Justice and Environmental Health in the Construction Industry:

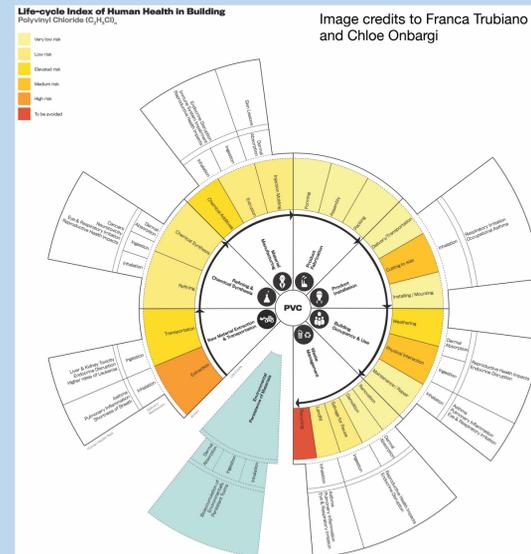


Polymers, Toxins, and Philadelphia Energy Solutions
Sage Basri (CAS '23) and Dr. Franca Trubiano (Weitzman School of Design)



Tracing the Materials

- Materials: Polymethyl methacrylate, Bisphenol A., Polyvinyl chloride, Polystyrene
- Local sites: Ashland Chemical, Honeywell Frankford, Allied Tube and Conduit, PES
- Followed the transformation of fossil fuels into these materials through their use in the building industry and in their waste phase



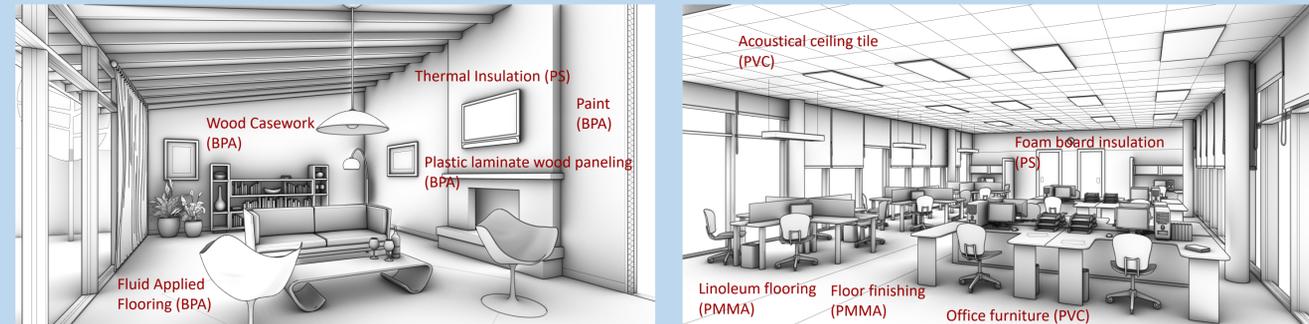
Results

- Uncovered that all local sites either manufacture or handle one or more of the materials
- Detrimental consequences for Philadelphia's air, water, and soil quality

Discussion

- The public is generally under-informed about the hazards posed by industrial sites in their communities
- In their use phase, the health hazards of polymer-based building materials are less visible than in their manufacture and waste phases
- Designs involving polymer-based building materials disproportionately affect under-served communities

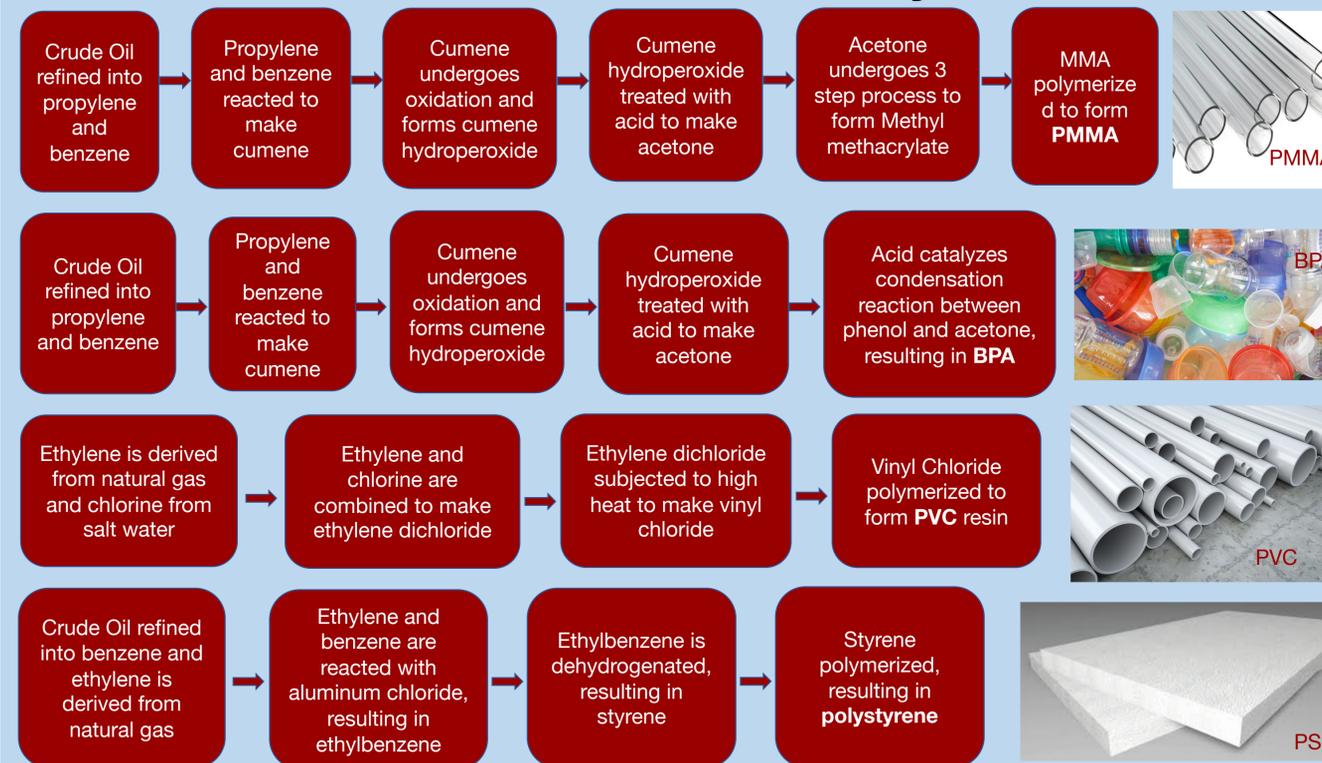
Tracing and Placing the Polymers of Interest In the Home and Office



PMMA: floor finishing, linoleum flooring, fluid-applied flooring
BPA: paint, architectural wood casework, plastic-laminate faced wood paneling
PVC: acoustical ceiling tile, office furniture, resilient flooring, vinyl tile flooring
PS: thermal insulation, foam board insulation, waterproofing, countertops

Image credits to Franca Trubiano and Eric Sobek Anderson

From Raw Material to Polymer



Acknowledgements

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The Problem

- In Penn's backyard exists a retired refinery and active chemical manufacturing facilities that contribute to poor community health across Philadelphia.
- These sites fabricate materials that are ubiquitous throughout the building industry

The PES Story

- Refinery complex operated about 160 years
- Comprised of Point Breeze and Girard Point refineries, which processed 335,000 barrels of light and sweet crude oil at its peak daily
 - Capitalized on North Dakota Bakken Oil boom, to the detriment of the MHA nation
- Previous shareholders and owners of the refinery include Sunoco and the Carlyle Group
- Explosions on June 21, 2019 in the alkylation unit caused by a corroded pipe elbow holding HF
- Since explosion, PES has been sold to Hilco Redevelopment Partners
- Remediation of the site is managed by Evergreen, a subsidiary of Sunoco
 - 11 Areas of Interest for cleanup
- Philly Thrive protests continued industrial activity at the site because of the negative community health impacts



PES Explosion on June 21, 2019, credits to WCAU